Altering nature's flow; Great lakes water shortage

Putting walls, gates into rivers would bring relief, but changes could open door to a new set of problems

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The levels of the Great Lakes and Lake St. Clair are in their seasonal decline, falling as winter approaches before being replenished in spring by melting snow.

How much the lakes, which are at near-record lows, rise next spring depends on how cold it is this winter and how much snow falls around the Lake Superior basin. Most forecasters expect the lakes to be as low -- or lower -- next summer as they were this summer.

Is there an alternative to high and dry for the hundreds of thousands of property owners and boaters? Yes.

Is it politically feasible? Probably not, at least not yet.

Studies from the early 1960s show that the lakes could be raised by placing structures in connecting channels of the Great Lakes, like the St. Clair, Detroit and Niagara rivers. These structures, placed upstream, would slow the river's flow -- causing water to back up into lakes, thereby raising levels.

"The issue certainly has been around a long time," said Doug Brown of Environment

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Canada, a government agency that oversees that country's environmental and water issues. "Anytime the level goes down below average, people look to what can be done."

The same is true when water levels are up. In the late 1980s, waterfront property owners advocated control structures because high levels caused flooding.

Three major studies have been conducted in the last 40 years by the International Joint Commission, a binational agency that carries out the U.S.-Canadian Boundary Waters Treaty of 1909. The treaty governs how the waters of the Great Lakes are used.

In 1964, officials considered installing compensating sills in the St. Clair River that would hold back water into lakes Huron and Michigan. Sills are conically shaped walls placed on the bottom of the river on either side of the navigation channel.

Another way to control lake levels is with mechanical gates that swing open to slow water flow. That allows more control in high and low water.

A temporary measure to achieve higher water levels would be the submersion of barges to slow a river's flow. The barges would work like a sill but be easier to remove.

After much study, the plan for the St. Clair River sills was scuttled.

"Ultimately, it was decided that it couldn't be justified," Brown said. "It has to be a series of sills, so then it becomes a costly exercise."

To raise the levels of lakes Michigan, Huron and St. Clair, it was proposed that nine gate structures be installed. There would be one across the St. Clair River at the Blue Water Bridge, another at Stag Island and one near the city of St. Clair and adjacent to Harsens Island.

Along the Detroit River, structures would be placed on both sides of Peche Island; in the

shadow of the Belle Isle bridge; at Zug Island; on the Canadian side of Fighting Island, and near the bridge to Grosse Ile.

Brown said he isn't sure how low lake levels would have to get before discussions about adding sills, control structures or barges would begin anew. Levels on the upper lakes have fallen more than 3 feet in the last three years.

"I guess we would have to experience something outside the recent range of history," he said.

Water shortage costly

The Great Lakes and Lake St. Clair -- with the exception of Lake Ontario, which has control measures already in place -- are flirting with all-time-low levels this fall.

"When we hit record lows, we hear more discussion" about sills and control structures, said Dave Schweiger, chief of hydrology and hydraulics for the U.S. Army Corps of Engineers' Detroit office.

Low lake levels have cost boaters and private enterprise millions of dollars.

Freighters have to carry less cargo so they don't run aground. Recreational boaters can be limited to where they can go and may not take overnight or weekend trips. Marinas may not be able to rent all their slips because of low water, and waterfront property owners may not be able to dock their boats. Low lake levels can affect the production at hydropower plants.

Lake levels have been manipulated in the recent past, typically when there has been too much water. In the mid-1970s when Lake Superior had high water, the International Joint Commission, or IJC, increased the outflows into the St. Marys River.

In the mid-1980s, the commission asked Ontario to reduce the flow through two diversions into Lake Superior. Province officials agreed.

Frank Bevacqua, commission spokesman, said

the United States and Canada would have to agree on everything concerning lake levels. If one country wants to install some measure to lower or raise lake levels, the other has to agree.

"The IJC makes sure interests in both countries are protected because there are a large number of people and environmental impacts that are possible," Bevacqua said. "It's not likely a significant modification would be made without full study of the economic, environmental and social impacts."

When the sills for the St. Clair River were considered, costs were discussed, but not the environmental impact. Bevacqua said any proposal for sills would require hearings, cost analysis and environmental assessment.

"Now we have a lot more capability to answer those questions," he said.

The problem with controls

Raising lake levels certainly would help those who are suffering because of the low water -- shippers, recreational boaters, marina operators and hydropower plant operators.

But there are problems with raising and keeping lakes at a certain level.

For example: What would happen when heavy winter snowfalls and rainy springs naturally raise lake levels? Shoreline residents could have flooding, and erosion could increase.

"The system is so huge it would take a long time for the Great Lakes system to react," said Mike Donahue, executive director of the Great Lakes Commission, a binational agency comprised of eight Great Lakes states and two Canadian provinces. "It could be 2-3 years before the levels would go up significantly. By that time, the area may have had some snowy winters and wet springs and the lakes are rising.

"Then you'd want the structures out."

Also, changing lake levels are good for the

environment, Donahue said.

"Fluctuations are good for wetlands, good for plant growth, waterfowl and fish spawning," he said.

The biggest obstacle to installing sills or control structures is cost. In a 1973 study, the estimated cost for the nine sills along the 89-mile stretch of the St. Clair and Detroit rivers was about $240 million. In today's dollars, that would be slightly less than $1 billion.

"If there was further study and then consensus, then somebody would have to ante up a large amount of money," said Brown of Environment Canada.

A no-win situation?

But what if lake levels dropped to unprecedented levels? Another 3-foot drop, for instance, would wreak havoc along the heavily developed shoreline of Lake St. Clair. How would government leaders respond to the hue and cry from recreational boaters who were having trouble launching their boats? Or boat dealers who want to sell boats?

Or from shipping companies who lose money from lightening their loads? Or from marina operators whose slips are unusable?

Historical records show the lakes fluctuate, rising and falling over a period of years. Some scientists, however, predict that global warming will mean the steady decline of lake levels.

Peter Sousounis, associate professor of meteorology at the University of Michigan, said forecast models predict the lakes will drop 3 feet during the next 100 years.

A study by Michigan State University for the Michigan Boating Industries Association, or MBIA, estimated that Great Lakes marinas lost about $11 million in 1999 because of low water. The loss for 2000 was estimated to be $30 million to $40 million.

George Ryan of the Lake Carriers Association in Cleveland said freighters are carrying about 5,000 tons less per trip this year compared with 1997, when lake levels were higher.

Pete Matta, chairman of MBIA and owner of the Lake Fenton Marina, said he believes lake levels will rise again and dislikes the idea of tinkering with nature.

"If the lake levels don't start to rise, then maybe you start thinking about what can be done," Matta said. "But it would have to become really a necessity, and by that I mean the health and welfare of people are in danger."

Schweiger said people should let nature take its course.

"There's only so much tinkering that can be done with the system," he said. "If the system was totally controlled, we dictate when the gates open and close. Even then, how do we keep everyone happy? Who do we want to help more? Michigan-Huron? Superior?

"And what interests on those lakes? Shipping? Recreational boaters? Hydropower?"

Donahue of the Great Lakes Commission said the Great Lakes can't be managed like a small reservoir. He said there is not an agreeable lake level to keep everyone happy.

"Everybody has an idea of what 'ideal' is," Donahue said. "Not all sectors would be happy with the outcome. I think ultimately it's a no-win situation trying to arbitrate lake levels."

Instead, Donahue said, everyone should just learn to live with fluctuations. He suggested stopping shoreline development and using nonstructural alternatives, such as floating docks.

"Focus more on accepting the lakes and adjusting our use around them," Donahue said. "When you start messing with Mother Nature, you get into trouble. These are the Great Lakes....

"We want to be real careful how we manage these waters."

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